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1º quincena de SEPTIEMBRE 2008

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14 AGO, 2008

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Cover: Immunologist Hyun Lillehoj holds a chicken gene chip that contains up to 10,000 chicken genes. Story begins on page 12. Photo by Stephen Ausmus. (D1145-1)

DUST IN THE WIND—Model farms inside wind tunnels show innovative ARS scientists where to place farm buildings to minimize dust and gaseous emissions from animal-production facilities.

ROLLED AND CRIMPED TO DEATH!—ARS agricultural engineers have developed machines that can roll and crimp a high-biomass cover crop like rye to death, which occurs with little or no herbicides added. Once it's dead, a cash crop can be planted into it. Benefits include soil conservation, weed control, reduced erosion, and cost savings for growers!

TOMATO GROWERS, TAKE HEART—Genetics studies of pepino mosaic virus (PepMV), widespread in Europe and now spreading in North America, and of some wild tomatoes and other members of the *Solanum* genus are leading to promising PepMV-resistant tomato strains.

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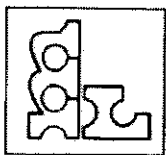
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BOLETÍN INFORMATIVO AGROPECUARIO DE LA LONJA DE MERCOLLEIDA

NÚMERO 2.088 — AÑO XXXV

SESIONES DE LONJA DEL 28 DE JULIO AL 1 DE AGOSTO DE 2008

SEMANAS 31-32/2008

HECHOS PRECIOS

LA OMC VUELVE A HACER AGUAS.

Después de nueve días de negociaciones, el director general de la Organización Mundial de Comercio (OMC) anunció el martes 29 el fracaso de un nuevo intento para alcanzar acuerdos sobre la agricultura y los productos industriales. De una lista de 20 temas, se había logrado la convergencia con respecto a 18 de ellos, pero no había sido posible salvar las diferencias con respecto al decimonoveno: el mecanismo de salvaguardia especial para los países en desarrollo. Mediante este mecanismo, estos países estarían autorizados a elevar temporalmente los aranceles para hacer frente a incrementos súbitos de las importaciones y caídas de los precios. La divergencia, según los responsables de la OMC, consistía en que algunos países querían un "nivel de activación" elevado (un gran incremento súbito de las importaciones como requisito para la activación del aumento arancelario), con objeto de evitar que la salvaguardia se activara a raíz de un crecimiento normal del comercio, mientras que otros querían un nivel de activación más bajo para que la salvaguardia fuera más fácil de utilizar y más útil.

Ver página 18

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CERDO CEBADO: 1,310 (=). Por segunda semana consecutiva, el precio ha sido fijado por la Junta de Gobierno de Mercolleida. Por segunda semana consecutiva, la divergencia de criterios de los operadores es tal que la negociación muere antes de empezar. La repetición, en un contexto de bajada de pesos y subida de las cotizaciones europeas, sólo hace que aplazar la confrontación una semana más. /página 3

LECHÓN 20 KG BASE LLEIDA: 20,00 (=). Los precios del lechón nacional se mantienen una semana más sin cambios: el deseo del productor de lechones de subir precios para poder (al menos) cubrir costes choca con la realidad de un mercado en el que la demanda sigue sin moverse. Las maltrechas tesorerías del cebadero disuaden a muchos de aventurarse en compras de lechones con una rentabilidad a cuatro meses vista (es decir, con cuatro meses de engorde por delante). /página 12

TERNERA CRUZADA 231-270 KG "R": 3,07 (=). El mercado no empeora, pero tampoco puede hablarse de una clara mejoría. Bien es cierto que las señales de hundimiento van quedando diluidas, pero de ahí a pronosticar un cambio de sentido, aún queda un trecho. /página 14

GRANULADO ALFALFA 2ª: 180,00 (=). Pocos cambios registra el mercado forrajero en este final de julio, por lo que los operadores aprovechan para "poner al día" sus estimaciones de campaña tras la publicación de la encuesta de producciones de la sectorial AEFA la semana pasada. En general, sorprende un poco el mayor descenso porcentual en hectáreas que en producción. /página 18

DATOS

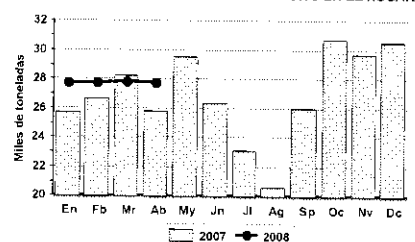
EL CONSUMO MÁS PLANO.

El consumo de carne de vacuno en España ha experimentado un aumento del 4,4% en el primer cuatrimestre de 2008 en relación al mismo período de 2007, según datos del MARM

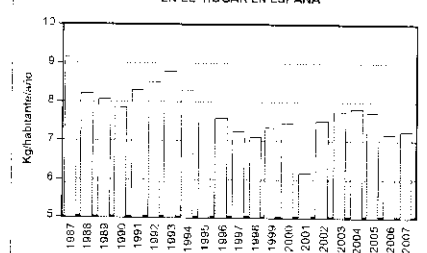
(Ministerio de Medio Ambiente, Rural y Marino). Al tiempo, en los primeros cuatro meses del año el consumo ha tenido un comportamiento lineal, al situarse ligeramente por debajo de las 28.000 tn en cada uno de los meses. Esto es, no se han producido los altibajos propios de este primer cuatrimestre del año.

* El año 2007 cerró con un aumento del consumo del 2,8% en tn y del 5,5% en euros, totalizando 323.114 tn y 2.741,8 millones de euros. El consumo per capita ha sido de 7,24 kilos (+0,84%) y el gasto por habitante y año, 61,43 euros (+3,6%).

CONSUMO ESPAÑOL DE CARNE DE VACUNO EN EL HOGAR



CONSUMO PER CAPITA DE CARNE DE VACUNO EN EL HOGAR EN ESPAÑA





El Producto Interior Bruto (PIB) generado por la economía aragonesa ha mantenido un buen ritmo de crecimiento en el primer trimestre de 2008, según las estimaciones del Departamento de Economía Hacienda y Empleo del Gobierno de Aragón, ya que ha avanzado un 3,1%, cuatro décimas por encima del dato español. No obstante, esta cifra es siete décimas inferior a la del cuarto trimestre de 2007, con lo que se ha reducido el diferencial positivo de crecimiento de la Comunidad aragonesa respecto a la Zona euro y la UE, que muestran para el mismo periodo unos avances del 2,1% y del 2,3%, respectivamente.

Un análisis detallado de la demanda aragonesa muestra que todos sus componentes han presentado un perfil moderado, con descensos en sus ritmos de crecimiento respecto a los trimestres anteriores. El consumo privado se ha debilitado y ha registrado una tasa de avance del 1,9%, la inversión en construcción se ha incrementado un 6,3% y el mejor comportamiento dentro de la demanda ha correspondido nuevamente a la inversión en bienes de equipo, con un aumento del 7,5%. El perfil de la demanda nacional es similar: una menor tasa de crecimiento en el consumo privado (1,8% en el primer trimestre de 2008), en construcción (1,3%) y en la inversión productiva (6,3%). Respecto a la demanda externa, la lectura de los datos disponibles resulta muy positiva para Aragón, ya que las exportaciones de mercancías han acumulado un incremento, en los cuatro primeros meses del año, del 15,8% frente al 1,5% de las importaciones. Estas cifras para España se han situado en el 9,9% y en el 12%, respectivamente.

Por el lado de la oferta, todos los sectores de la economía aragonesa han contribuido positivamente al aumento del PIB regional, aunque han mostrado un descenso en su dinamismo. El sector de la construcción ha vuelto a liderar el crecimiento económico aragonés, con un incremento del 4,9%, 1,1 puntos menos que el dato del último trimestre de 2007. Los servicios han registrado una tasa de variación positiva del 3,9%, casi seis décimas inferior al último dato. Por su parte, el ritmo de avance de la industria se ha situado en el 1%, frente al 2,9% del trimestre anterior y el 4,2% del primer trimestre de 2007. Cabe señalar que todos los sectores han crecido en la Comunidad aragonesa por encima del

promedio nacional, destacando el diferencial positivo a favor de Aragón en el sector de la construcción, 3,5 puntos.

La tasa interanual del Índice de Precios al Consumo (IPC) ha crecido en mayo un 4,6% a nivel nacional, mientras que la inflación subyacente, que excluye alimentos frescos y productos energéticos, ha registrado un aumento del 3,3%. Esta evolución de los precios ha situado el diferencial de precios con la Zona euro en un punto porcentual y con la UE en 0,8 puntos porcentuales. En Aragón la tasa de inflación se ha situado en el 4,9%, por encima de la media española, y la inflación subyacente en el 3,9%, cifra idéntica al promedio nacional.

En el primer trimestre de 2008, la población en edad de trabajar creció un 1,5% respecto al mismo periodo del año anterior. Un crecimiento muy similar al ámbito nacional (1,6%). La población activa ha tenido un aumento del 3,7% situándose tanto en hombres como en mujeres por encima del incremento español. La tasa de actividad en Aragón (58,9%) es ligeramente inferior a la de España (59,4%), aunque por su variación interanual se aproxima a la española tanto en su conjunto (2,2%), como en su reparto por sexos (incremento de 1,35% en varones y 3,35% en mujeres). Únicamente en los menores de 25 años esta variación es negativa, -1,6% en la Comunidad frente al 2,3% del total de España.

En el mercado de trabajo aragonés, los ocupados aumentaron el doble que la media nacional (1,7%). La tendencia positiva más importante se da dentro de las mujeres (con un incremento del 6%). Los sectores productivos más favorecidos por el crecimiento de la ocupación son la industria y la construcción (9,5% y 7,3% respectivamente). La evolución negativa del empleo en la agricultura, comparada con el mismo trimestre del año anterior, es de un -16,6%, una regresión más notable que en el conjunto de España (-12,8%). La tasa de empleo ha superado tanto en su conjunto, en su distribución por sexo, como en los menores de 25 años a la tasa española. Se sitúa en un 55,4 frente al 53,6 de la tasa nacional. Además, en Aragón, sigue creciendo próxima a 2%, mientras en España se encuentra en un crecimiento cero.

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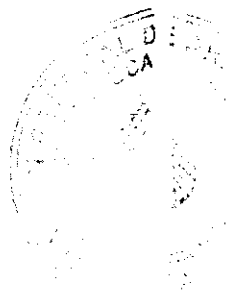
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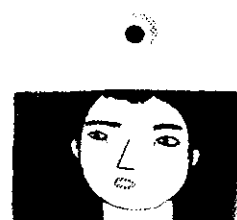
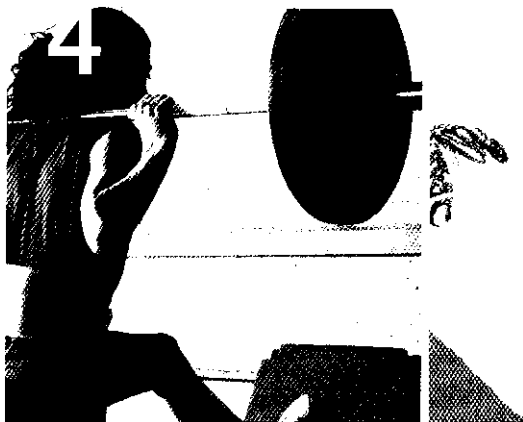
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DE ERRORES DEL NÚMERO ANTERIOR

En el análisis comparativo de gafas de sol correspondiente al pasado mes de junio, número 122 de CONSUMER EROSKI, y debido a un error, los precios de 8 de las 20 gafas de sol estudiadas eran incorrectos. En los ocho casos, el precio publicado era inferior al que los consumidores encontrarán en los establecimientos comerciales. Las gafas de sol afectadas por el error fueron las siguientes:

Ray Ban 3311 (el precio real es 122,43 euros), *Gucci 2930/S* (el precio real es de 257,20 euros), *Dior Diorito 2LRVJN* (el precio real es de 286,4 euros), *Massimo Dutti 4501 501* (el precio real es de 68,25 euros), *Hugo Boss 0063/S* (el precio real es de 194,25 euros), *Oxydo X-Stell2 6LBN2* (el precio real es de 95,57 euros), *Carolina Herrera 212-2388* (el precio real es de 150 euros) y *Armani A126 COLO1* (el precio real es de 29,50 euros). Lamentamos profundamente los problemas que este error ha podido causar a lectores, tiendas de óptica y cualesquiera otros perjudicados.

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Ag futures in spotlight

By SALLY SCHUFF

A SERIES of House hearings held last week on commodity futures trading were closely watched.

While their main focus was on the politically charged issue of the role of speculation in energy contracts, the concerns echoed many expressed by agricultural hedgers this year.

In an exchange with Commodity Futures Trading Commission (CFTC) acting chairman Walter Lukken, Rep. Jo Ann Emerson (R., Mo.) spelled out concerns that have plagued agricultural hedgers in recent months.

In her remarks July 10, Emerson asked Lukken about the lack of convergence between

Key Points

- House Ag Committee to look at legislation before August recess.
- CFTC schedules ag hearing July 29.

cash prices and prices in expiring futures contracts.

She noted that on July 9, the cash price of wheat on the Toledo, Ohio, delivery point was \$1.20-1.30 below the Chicago Board of Trade. Emerson asked Lukken for "an explanation for the lack of convergence."

Price convergence as future contracts expire are key to making it feasible to hedge price risks for agricultural traders.

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G8 endorses WTO talks

By IAN ELLIOTT

NEW Zealand Ambassador Crawford Falconer told negotiators from the World Trade Organization's 152 member governments last Monday that he has made "some progress" in recent private talks on agriculture.

Falconer, who chairs the WTO Doha Round agriculture talks, delivered his progress report to a closed-door meeting in Geneva, Switzerland.

The next day, half a world away in northern Japan, leaders of G8 countries (Britain, Canada, France, Germany, Italy, Japan, Russia and the U.S.) endorsed the Geneva talks, pledging that their governments "will work toward the urgent and successful conclusion of an ambitious, comprehensive and balanced Doha Round."

By "balanced," the G8 lead-

Key Points

- Chairman ready to circulate new draft accord.
- Progress made on farm income support programs decoupled from production.
- No cotton subsidy understanding completed yet.

ers are looking for solid trade reform packages on agriculture, industrial products, services and rules, Japanese foreign ministry officials explained. They are also looking for balance within each of these packages.

Negotiators are scrambling to agree on the nuts and bolts of reform plans for agricultural and industrial products before the end of July. Those plans will be laid out in two "modalities" agreements.

■ Continued page 25

NCBA starts review

By ROD SMITH

A NEWLY appointed task force of the National Cattlemen's Beef Assn. (NCBA) will begin looking at more than 100 years of cattle group mergers this week to determine if NCBA's "governance structure" needs to be changed to make the organization more effective and efficient, according to an announcement.

The task force is charged with identifying improvements that would strengthen NCBA's service to its members, especially in responding to consumer, legislative and regulatory issues affecting cattle and beef production, the announcement said.

NCBA is the product of several cattle organizations that came together in the last 100-plus years "to fight for cattlemen's rights and solve the industry's toughest challenges," noted NCBA president Andy Grosetta, a rancher from Cottonwood, Ariz.

"Our governance structure shows signs of being a product of (those) multiple mergers, and it needs to be evaluated to ensure its effectiveness and efficiency for the next 100 years," he said.

Grosetta, NCBA president-elect Gary Voegt, an Angus producer in Michigan, and vice president Steve Fogle, a cow/calf producer and feedlot operator in Illinois, named two former presidents — immediate past president John Queen from North Carolina and Jan Lyons from Kansas — as co-chairs of the task force.

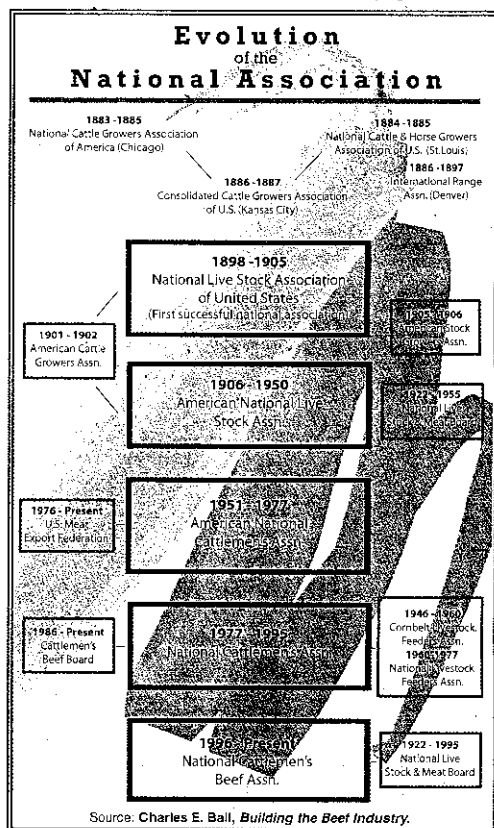
The five, in turn, selected

18 task force members from nominations received from across the U.S.

The task force is scheduled to begin its review at the Cattle Industry Summer Conference in Denver, Colo., this

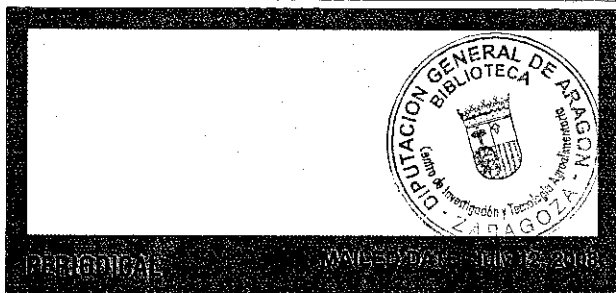
week with a listening session from 4:45 to 6:00 p.m. July 17. Grosetta said he expects the group to take "at least a year" to complete its work.

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OECD report says public support for biofuels is costly
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Feed

Feedstuffs reviews feed industry events since 2000
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Judge limits CRP grazing

By JACQUI FATKA

A FEDERAL judge ordered the U.S. Department of Agriculture and the National Wildlife Federation to work out a compromise to allow limited haying and grazing while still protecting conservation.

U.S. district court Judge John Coughenour ruled to allow livestock producers to utilize at least 2.5 million acres of non-critical Conservation Reserve Program (CRP) land for haying and grazing, rejecting the calls for a ban on USDA's Critical Feed Use Initiative.

On July 17, the U.S. District Court for the Western District of Washington held a hearing on a temporary restraining order on critical feed use of CRP acres (Feedstuffs, July 14).

Previously, on July 8, the judge had ordered a 10-day restraining order that halted all critical feed use activity underway.

At the time of the injunction, Farm Service Agency (FSA) officials indicated that contracts approved for the program represented 2.1 million acres, with approximately 1.7 million planned for haying and grazing use. A total of 24 million acres were initially eligible for the program.

The judge gave both sides until noon July 22 to work out elements of the compromise. He promised to issue a modified preliminary injunction on the same day implementing an adapted version of the Critical Feed Use program.

Until his final ruling is released, the temporary restraining order remains in place, and all current haying and grazing practices must cease.

■ Continued page 5

Law empowers activists

By ROD SMITH

ANIMAL rights and vegetarian activists could have the authority to enter and search California farm buildings and arrest producers for suspected violations of animal welfare laws if California voters approve a ballot initiative this fall, Feedstuffs has learned.

This is the conclusion of attorneys who are analyzing the legal consequences of the initiative for agricultural and food interests in California, whose "Californians for SAFE Food" coalition was organized to educate Californians on the initiative and urge them to vote no on the measure (story, page 21).

The determination makes it exceedingly important for producers and production companies, trade associations and allied industry across the U.S. to become involved in the "SAFE Food" coalition, its supporters said.

The initiative — which has been designated Proposition 2, or "Prop 2" — is directed at the treatment of farm animals and, if passed, would require that farm animals not be confined or tethered in a manner that prevents an animal from lying down, standing up, turning around and fully extending its limbs (Feedstuffs, March 3 and April 14).

For a hen in an egg production system, fully extending its limbs means extending its wings without touching the sides of an enclosure, such as a cage, or another hen, according to the initiative.

The initiative is directed at cage housing systems for

Key Points

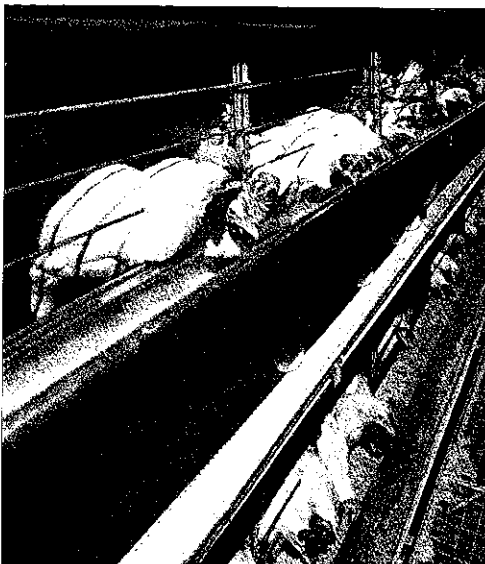
- California law allows non-profits to request search warrant.
- Prop 2 outcomes signify threat to ag everywhere.
- Studies find even most cage-free housing would be banned.

hens and sow and veal calf stalls, but recent studies found that even most barn,

or cage-free, housing systems for hens would be prohibited under the requirement (Feedstuffs, May 26).

The law would become effective on Jan. 1, 2015, and would carry penalties for violations of a fine not to exceed \$1,000 and/or a jail term not to exceed 180 days. Legal observers have said violations could cover each animal.

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GOOD HOUSING: Ethicists and poultry scientists have determined that hens in cage production systems are housed at high levels of animal husbandry and welfare, but a California ballot initiative this fall would ban both cages and most cage-free egg production in the state.

Argentine imports stir FMD fears

By SALLY SCHUFF

FEARS of foot and mouth disease (FMD) from imports came into play last week, resulting in Senate action to prevent fresh meat and livestock from Argentina from being imported into the U.S.

Should a provision in the Senate agricultural appropriations bill prevail, such imports would be blocked, but the bill's language is a long way from being enacted into law.

On July 17, the U.S. Cattlemen's Assn. (USCA) and R-CALF USA hailed a bipartisan amendment sought by Sens. Tim Johnson (D., S.D.) and Mike Enzi (R., Wyo.) that would prevent the U.S. Department of Agriculture from spending money to open the U.S. border to imports from Argentina.

A USDA proposal to allow some imports from FMD-free regions of Argentina is believed to be near completion of the rulemaking process.

In the House, Reps. Stephanie Herseth Sandlin (D., S.D.) and Barbara Cubin (R., Wyo.) introduced a ban on implementing the proposed rule.

Despite the recent Senate action, it is not clear if, or when, the measure to stop the Argentine imports will go into effect.

Senate and House leaders have said publicly they do not expect fiscal 2009 appropriations bills to be acted upon until sometime next spring, after a new Administration is in office.

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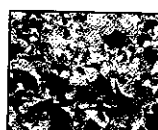
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EPA delays request for RFS waiver

By JACQUI FATKA

ENVIRONMENTAL Protection Agency Administrator Stephen Johnson said the agency will have to delay a pending waiver request for a 50% reduction of the national ethanol mandate.

In April, Texas Gov. Rick Perry requested a waiver of the renewable fuels standard (RFS) and to reduce the 9 billion-gallon corn-based ethanol mandate to 4.5 billion gallons.

The final decision on the request was supposed to be completed by July 24, but in a statement last week, Johnson said it will be early August before a final determination can be made.

Shortly after the request, EPA sought comments on the waiver. Johnson said EPA received more than 15,000 comments, with many raising "substantive issues" and including "significant economic analysis."

He added, "I believe it is very important to take sufficient time to review and understand these comments in order to make an informed decision."

Prior to the announcement, a group of Midwest senators criticized Johnson for meeting behind closed doors with Perry July 9 to discuss Texas' request to waive the RFS mandate and said Johnson had "supposedly reached an agreement to postpone making a decision."

■ Continued page 5

Limited CRP grazing allowed

By JACQUI FATKA

A FEDERAL judge in Seattle, Wash., ruled last week to conditionally allow haying and grazing on Conservation Reserve Program (CRP) acreage as part of the U.S. Department of Agriculture's Critical Feed Use program.

The judge decided to allow those with approved applications to resume activity and those with pending applications to proceed.

The July 24 ruling replaces a temporary restraining order first instituted July 8 and was decided on as a compromise ruling from the judge.

Judge John Coughenour ruled that there will be no cap on eligible acres for haying and grazing, and producers whose contracts were already modified and approved for critical feed use can immediately proceed with haying and grazing and continue through Nov. 10, as USDA originally announced.

■ Continued page 4



CRP COMPROMISE A judge last week ruled that there will be no cap on eligible CRP acres for haying and grazing, and producers whose contracts were already modified and approved for critical feed use can immediately proceed.

U.S. offers to limit subsidies to \$15b at WTO

By IAN ELLIOTT

IN a bid to advance tough World Trade Organization talks, President George Bush's top trade negotiator last Tuesday offered to conditionally limit U.S. trade-distorting farm subsidies to \$15 billion per year.

"We stand ready to reduce our OTDS (overall trade-distorting domestic support) to \$15 billion," U.S. Trade Representative Susan Schwab told a news conference in Geneva, Switzerland, on the second day of critical WTO talks.

Key points

- U.S. offer conditional on market access outcome.
- Offer came after others signaled willingness to soften positions.
- Schwab said farm programs would need adjustments.

She said the offer was conditional upon "an ambitious market access outcome in agriculture and NAMA (industrial products)" and on "assurances that if our (farm)

programs meet these disciplines, they are not subject to subsequent legal challenges that reduce them further" — in other words, a new peace clause.

"This is a major move, taken in good faith, with an expectation that others will reciprocate and step forward with improved offers in market access," Schwab added.

The opening U.S. offer came early on in a week of talks in Geneva, where three dozen trade and agriculture ministers are trying to agree on how to cut subsidies and tar-

iffs on agricultural and industrial products.

An agreement on the final details of the reforms would not finish the Doha Round. Instead, negotiators would need months of talks through the fall before a final deal emerges. Then, legislatures in 153 WTO member countries (Cape Verde became a member last week) would need to ratify any agreement.

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JAVMA News

AVMA Assistant Executive Vice President Lyle P. Vogel told a Senate committee in June that wide-scale bans on approved uses of antimicrobials in food animals would hurt animals, do little to improve public health, and could, in fact, lead to an unsafe food supply. *See PAGE 370*

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PUBLIC VETERINARY MEDICINE: PUBLIC HEALTH

A veterinary perspective on the guidelines for animal-assisted interventions in health-care facilities

Early in 2008, guidelines designed to minimize the possibility of adverse events during AAls in health-care facilities were published. In large part, these guidelines were directed at health-care facility staff and individuals who own and handle participating animals. However, certain aspects of the guidelines have a direct impact on veterinarians involved in screening and providing care for participating animals. *See PAGE 394*

SPECIAL REPORT

US consumer pet-related and veterinary service expenditures, 1980–2005

Analysis of data from the US Bureau of Labor Statistics revealed that overall spending on veterinary services increased substantially over the study period, despite an increase in the proportion of pet-owning households that did not spend anything on veterinary services. The probability of veterinary service expenditures was strongly related to household income. *See PAGE 404*

NASPHV COMPENDIUM OF VETERINARY STANDARD PRECAUTIONS

Zoonotic disease prevention in veterinary personnel

Veterinary personnel are routinely exposed to infectious pathogens, many of which are zoonotic. However, infection control measures vary from practice to practice and are often insufficient to prevent zoonotic disease transmission. Guidelines provided in the compendium are designed to minimize transmission of zoonotic pathogens from animals to veterinary personnel in private practice. *See PAGE 415*

Cefovecin for treatment of bacterial folliculitis, abscesses, and infected wounds in dogs

Cephalosporins are frequently used to treat skin infections in dogs, but cephalosporins previously approved for use in dogs must be administered once or twice a day for as long as 30 days. In contrast, cefovecin is administered once SC, with a second dose administered 7 to 14 days later. In a randomized controlled trial involving 235 dogs with naturally occurring skin infections, clinical efficacy of cefovecin was equivalent to that of cefadroxil. For 109 of the 118 (92.4%) dogs treated with cefovecin and 108 of the 117 (92.3%) dogs treated with cefadroxil, treatment was considered successful at the time of final assessment 14 days after the end of treatment. *See PAGE 433*

Transcutaneous pulmonoscopy for examination and biopsy of the lungs in ball pythons



Respiratory diseases are common in snakes, and collection of exudates and tissues samples from the respiratory tract are essential in making a diagnosis. However, the long, narrow trachea of snakes makes it difficult or impossible to use most endoscopes to evaluate the distal portion of the trachea and lungs via an endotracheal approach. Consequently, transcutaneous insertion of a rigid endoscope directly into the lung has been advocated. In a study involving 17 subadult and adult ball pythons, a technique for transcutaneous pulmonoscopy in which a rigid, 2.7-mm endoscope was used for examination and biopsy of the lower respiratory tract was developed. *See PAGE 440*

Actinomycin D as rescue therapy in dogs with relapsed or resistant lymphoma

Most dogs that undergo chemotherapy for treatment of lymphoma have a relapse or develop resistance. Thus, there is a need for effective rescue chemotherapy protocols. A review of medical records of 49 dogs with relapsed or resistant lymphoma treated with actinomycin D revealed that 20 (41%) dogs had a complete remission, with a median disease-free interval of 129 days. Thrombocytopenia was the most common hematologic toxicosis. Concurrent prednisone administration, a shorter duration of first remission, and an increased number of previous chemotherapy agents were significantly associated with a lower likelihood of remission. Concurrent prednisone administration and an increased number of previous chemotherapy agents were significantly associated with a shorter disease-free interval. *See PAGE 446*

Cheek tooth occlusal morphology and ingesta particle size reduction in horses

Controversy exists regarding the clinical usefulness of regular dental floating in apparently healthy horses. In a previous study, there was no significant difference in feed digestibility or fecal particle size between horses that did or did not undergo dental floating, but it could not be determined whether mastication was more efficient following dental floating. In a study of 17 horses fed hay-based diets, there was no evidence of associations between cheek tooth morphologic variables, fecal particle size, and apparent feed digestibility. Particle size of the stomach contents was not significantly different from fecal particle size, indicating that mastication was the most important determinant of feed particle size reduction in horses.

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Rupture of the metacarpophalangeal and metatarsophalangeal collateral ligaments in horses

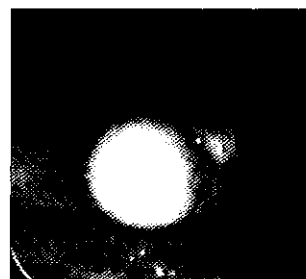
In horses, rupture of the collateral ligaments of the metacarpophalangeal or metatarsophalangeal joints has often been associated with luxation or subluxation, severe lameness, and a poor prognosis for return to athletic function. A review of medical records of 17 horses with CL rupture revealed that 9 horses had palpable joint instability and 10 had evidence of joint instability on stress radiographs. However, all 17 horses had ultrasonographic evidence of CL rupture. No biaxial ruptures were detected, but 9 horses had ultrasonographic evidence of CL desmitis on the nonruptured side of the affected joint. Eight of 16 horses treated with conservative management successfully returned to riding purposes.

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Use of intralesional formalin administration for treatment of a subepiglottic cyst in a horse

Endoscopic examination of the larynx, pharynx, and trachea in a 4-year-old horse evaluated because of chronic coughing, mucopurulent nasal discharge, and failure to thrive revealed a fluctuant subepiglottic cyst approximately 2 cm in diameter. Because of economic considerations, surgical resection and laser ablation were not viable treatment options. Therefore, intralesional

formalin injection was recommended. After 2 injections of formalin, 2 weeks apart, the cyst had completely resolved, with no evidence of scarring or epiglottic deformity. Findings suggested that intralesional formalin administration may be a viable treatment option in horses with subepiglottic cysts when other treatments are not available.



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Effect of a subunit vaccine on subclinical shedding of *Salmonella enterica* in dairy cows

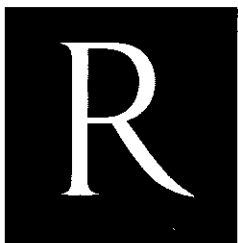
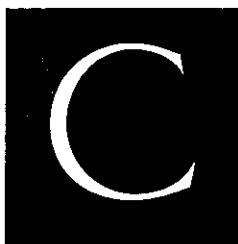
A subunit vaccine approved for the control of clinical salmonellosis caused by *Salmonella* Newport in dairy cattle has been used in an extralabel manner to control salmonellosis attributable to other *Salmonella* serovars. However, efficacy of this extralabel use has not been established. In a randomized controlled trial involving 175 dairy cows from 2 herds with a history of *Salmonella* infection, 25% of the cows were vaccinated with the subunit vaccine and fecal samples were collected for up to 10 weeks. *Salmonella enterica* was isolated from 46 of the 651 (7.1%) fecal samples, and proportions of vaccinated and control cows shedding *S enterica* were similar on each of the collection dates.

See PAGE 466

Evaluation of five clinical chemistry analyzers for use in health assessments of sea turtles

An important source of variability in biochemical data is the equipment used to perform the analyses. When replicate blood samples from 22 captive juvenile sea turtles were analyzed with a handheld analyzer and 2 tabletop analyzers and by 2 diagnostic laboratories, significant differences were found among most values obtained, except that results obtained by the 2 diagnostic laboratories were similar for all analytes. The magnitude of difference for values obtained by the diagnostic laboratories versus the in-house units was $\geq 10\%$ for 10 of 15 analytes. Depending on the analyte and particular case, this magnitude of difference could conceivably have influenced patient management.

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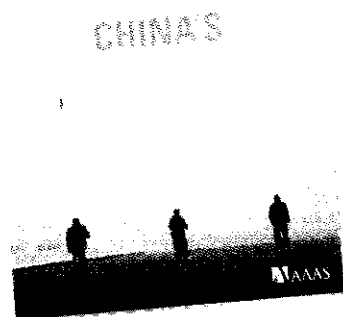
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Science



COVER

Heavy pollution blankets Tiananmen Square, Beijing, on 27 December 2007. Chinese authorities are taking drastic measures to improve the city's air quality for the Olympics. Bad air is just one of many environmental challenges China is facing. See the special News Focus section beginning on page 628.

Image: Feng Li/Getty Images

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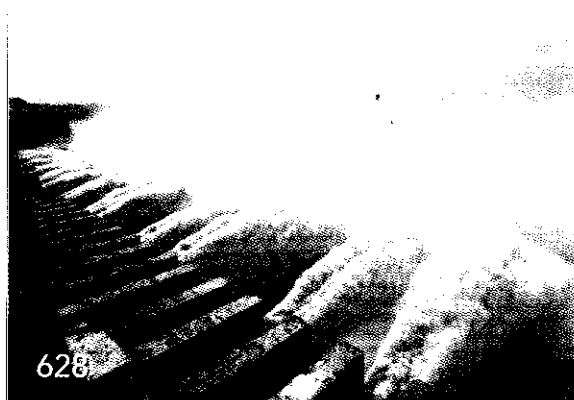
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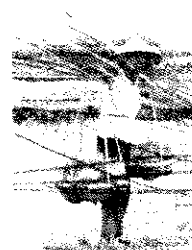
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www.sciencexpres.org

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Induced Pluripotent Stem Cells Generated from Patients with ALS Can Be Differentiated into Motor Neurons

J. T. Dimos et al.

Skin cells from elderly individuals with a mutation that causes amyotrophic lateral sclerosis (ALS) were used to derive stem cells that could then be differentiated.

10.1126/science.1158799

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Regional Synthesis of Mediterranean Atmospheric Circulation During the Last Glacial Maximum

J. Kuhlmann et al.

A three-dimensional reconstruction of atmospheric temperatures in the Mediterranean during glacial times is analogous to one of winter during the Little Ice Age.

10.1126/science.1157638



DEVELOPMENTAL BIOLOGY

Dual Origin of Tissue-Specific Progenitor Cells in *Drosophila* Tracheal Remodeling

M. Weaver and M. A. Krasnow

When fruit flies metamorphose from larvae, a new trachea forms both from undifferentiated cells of the imaginal disc and differentiated cells that re-enter the cell cycle.

10.1126/science.1158712

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M. W. Kanan and D. G. Nocera

A catalyst that precipitates in situ when cobalt ions are reduced in a phosphate buffer efficiently forms oxygen from water needed for electrochemical applications.

>> News story p. 620; Science Podcast

10.1126/science.1162018

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J. F. A. Jansen, J. D. Gearhart, J. W. M. Bulte

Full text at www.sciencemag.org/cgi/content/full/321/5889/640

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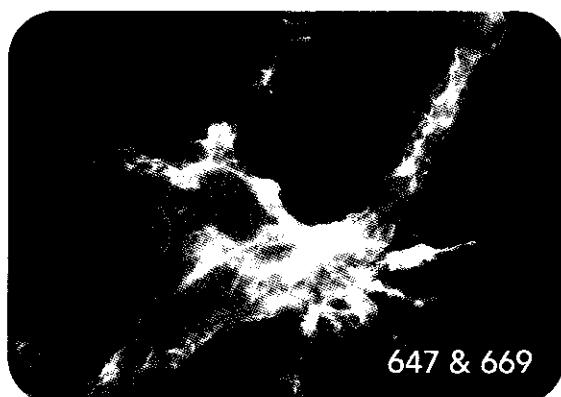
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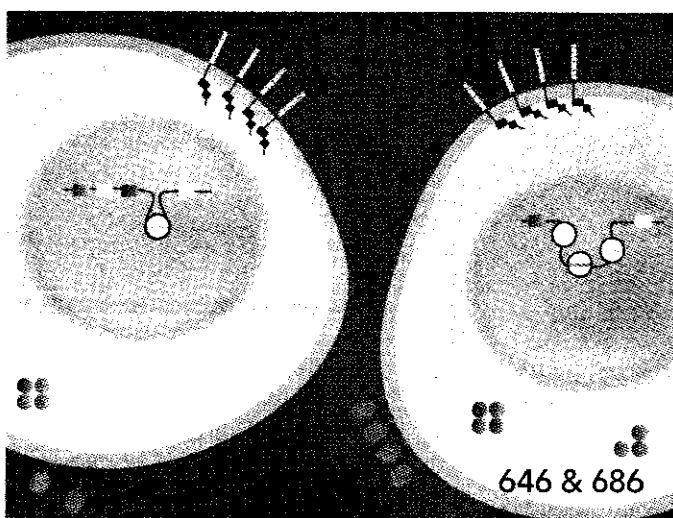
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Pain neurons containing a particular sodium channel respond only to cold, mechanical, and inflammatory pain, not to all painful stimuli as previously assumed.



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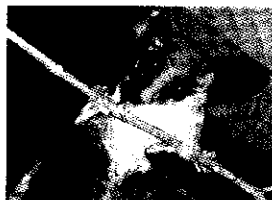
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Researchers discover a wild tree shrew that lives on alcoholic nectar.

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Plate tectonics gave rise to atmospheric oxygen.

To Sleep, Perchance to Forget

Aging may impair the consolidation of memories during sleep.



A career in keeping athletics clean.

SCIENCE CAREERS

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THE CAREER RESOURCES FOR SCIENTISTS

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Anesthetics increase postoperative pain.

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PODCAST

N. R. Gough and A. M. VanHook

Some anesthetics activate TRPA1 channels to trigger pain and nerve-mediated inflammation.

PRESENTATION: A Static Network Analysis Tool for Pharmacological Analysis of Signal Transduction Pathways

B. B. Samal and L. E. Eiden

Simulate knocking out one or more components from a pathway to find alternate connections between a stimulus and a target response.

SCIENCEPODCAST

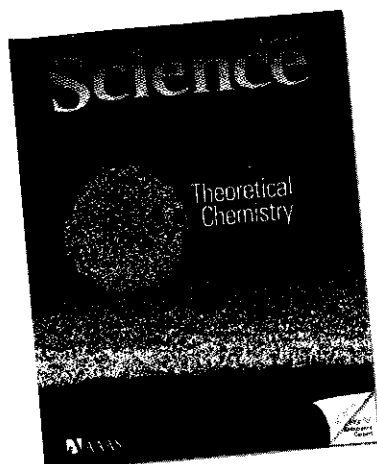
www.sciencemag.org/multimedia/podcast

FOR SCIENTISTS AND STUDENTS

Download the 1 August *Science* Podcast to hear about a water-splitting catalyst for energy storage applications, the molecular basis of pain, China's environmental challenges, and more.



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COVER

Simulation of a vesicle interacting with a lipid bilayer (lipid head groups in green and blue, tails in cyan; water is not shown). The computation uses a coarse-grained model with over 1 million interaction sites, equivalent to more than 10 million atoms. See the special section beginning on page 783.

Image: Wataru Shinoda/Research Institute for Computational Sciences, National Institute of Advanced Industrial Science and Technology, Japan; Mike Klein/Center for Molecular Modeling, University of Pennsylvania

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R. P. Allan and B. J. Soden

Satellite data show that in the tropics, heavy rain events have increased in warmer months and decreased in colder months, more than predicted by climate models.

10.1126/science.1160787

BIOCHEMISTRY

Helical Structures of ESCRT-III Are Disassembled by VPS4

S. Lata et al.

A protein responsible for the final separation of daughter cells or budding viruses forms heteromeric complexes on the inside of the membrane to regulate the abscission step.

10.1126/science.1161070

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T. Sekitani et al.

A carbon nanotube-polymer film containing organic transistors and coated with silicon rubber can maintain its electrical properties while being stretched up to 70 percent.

10.1126/science.1160309

EVOLUTION

Parasite Treatment Affects Maternal Investment in Sons

T. E. Reed et al.

Mother seabirds that are infected by parasitic nematodes are less able to gather food and feed their fast-growing sons, shifting the sex ratio and affecting population viability.

10.1126/science.1159466

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D. R. Ifa, N. E. Manicke, A. L. Dill, R. G. Cooks

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B. King-Casas et al.

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see Perspective p. 776, Science Podcast

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The Crystal Structure of a Sodium Galactose Transporter Reveals Mechanistic Insights into Na⁺/Sugar Symport 810

S. Faham et al.

The structure of a sugar transporter suggests how these proteins may rearrange to permit the sugar to enter and leave the binding site on opposite sides of the membrane. *see Perspective p. 781*

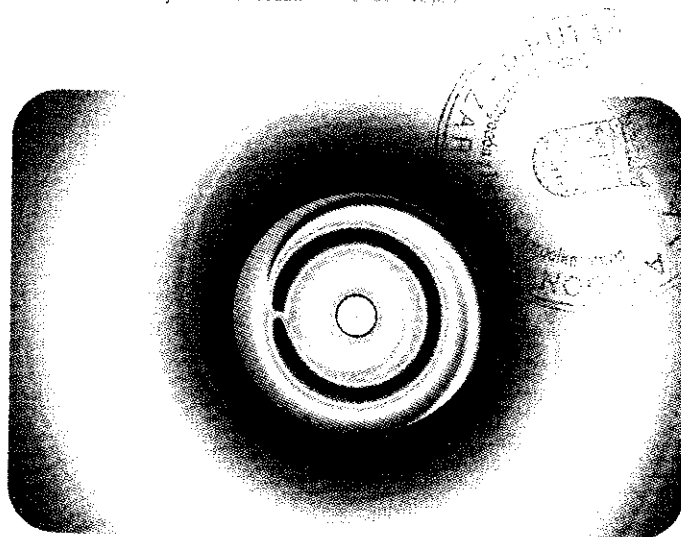
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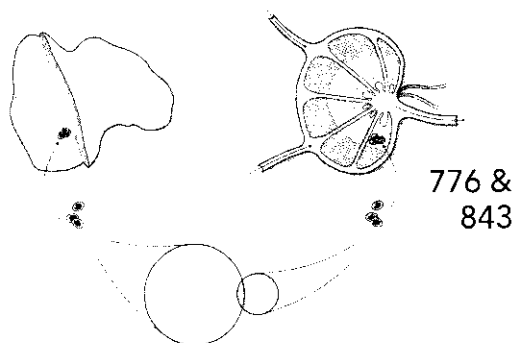
E. W. Thommes, S. Matsumura, F. A. Rasio

A model of the evolution of planets from a gas-rich disk shows that the disk's density and viscosity affect the final distribution of planets and that our solar system is unusual. *see Perspective p. 777*



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P. M. Bays and M. Husain

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www.sciencereers.org



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SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals Mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2008 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$144 (\$74 allocated to subscription); Domestic institutional subscription (51 issues): \$770; Foreign postage extra: Mexico, Caribbean (surface mail) \$55; other countries (air assist delivery) \$85. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request. GST #R1254 88122. Publications Mail Agreement Number 1069624. SCIENCE is printed on 30 percent post-consumer recycled paper. Printed in the U.S.A.



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Signs of neurons.

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Poached Tusks Point to Killing Fields

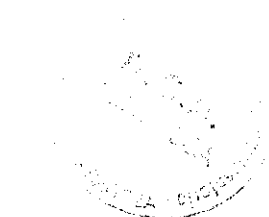
Genetic analysis enables researchers to trace contraband to region of origin.

Unmasking Dark Energy

Astronomers find its unseen hand at work in the biggest structures in the universe.

Stem Cell Breakthrough in ALS Research

Researchers reprogram skin cells from a patient to become motor neurons.



Opportunities for geoscientists.

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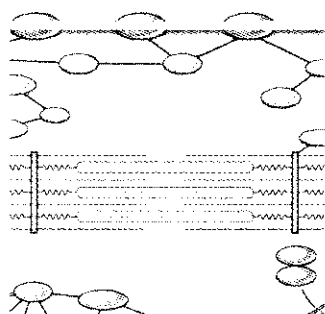
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K. Travis

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>> See also Geoscience Careers feature p. 856



Sarcomeric proteins.

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PERSPECTIVE: The Dynamic Z Bands of Striated Muscle Cells

J. M. Sanger and J. W. Sanger

In contrast to its stolid image, the Z band of the mature myofibril is a beehive of activity.

FUNDING SOURCES

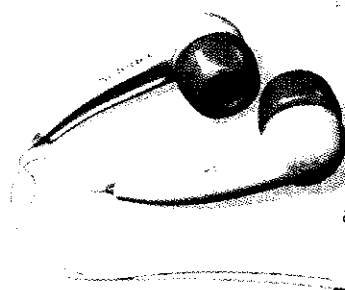
Browse a list of grants and funding opportunities for cell signaling research and training; in the Resources section.

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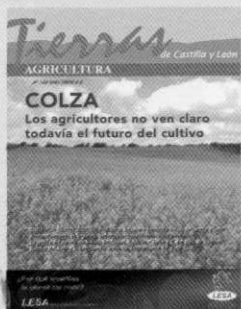
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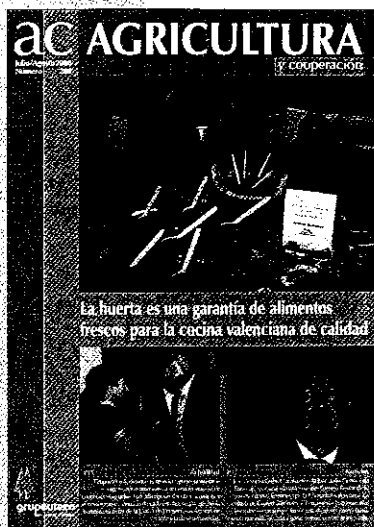
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nº 280



sumari

Edita

Unión Provincial de Cooperativas del
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Editorial

No siempre más, fueron mejores.

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Farm structure in Malta - 2007

Increase in the number of horticultural holdings: 39% from 2005 to 2007.

This Statistics in Focus is part of a series of country-specific publications on the results of the Farm Structure Survey (FSS) 2007. It provides a brief but nevertheless comprehensive insight into the farm structure in Malta.

11 020 agricultural holdings were recorded in Malta in the 2007 Farm structure survey (55 less than in 2005). Only 38% of these holdings had an economic size of at least one European Size Unit (ESU), compared to about 74% in 2005. This big difference is due to a change in agricultural prices, which has reduced the total Standard Gross Margins (SGM) over recent years.

Due to the different coverage of the FSS across Member States, the total number of farms is not comparable between countries. This is why the present analysis, including Tables 1-4 and the graphs focus on holdings of at least 1 ESU. See the methodological notes for more information on the concept of ESU.

In 2007, about 4 100 holdings had an economic size of at least 1 ESU.

- They made use of **7 200 ha of utilised agricultural area (UAA)**, which is on average **1.75 ha** per holding (compared to **1.11 ha** in 2005);
- These holdings employed **3 400 annual work units (AWU)**, the equivalent of 3 400 people working full time;
- They had **49 000 livestock units (LSU)** in 2007, 7% more than in 2005.

Amongst these **4 100** agricultural holdings (≥1ESU):

- **65%** made use of less than one AWU, while another **10%** made use of 2 or more AWUs;
- **42%** used less than 1 ha, while **27%** used 2 ha or more;
- 11% of the holdings were producing mainly for own consumption;

- 31% of the holdings specialised in horticulture and 22% were holdings of the type mixed cropping;
- 16% of the holdings specialised in livestock;
- 3% were mixed farms.

The labour force has decreased by 12% from 2005 to 2007.

Amongst the sole holders:

- 5% were women in 2007, (compared to 7% in 2005);
- 50% were aged 55 or more, and 6% were younger than 35 years;
- 50% of sole/main holders had another gainful activity in 2007.

In Malta in 2007, 18% of the agricultural area was farmed by the owner.

There was an increase of 11% in the number of goats, but a reduction of 23 % in the number of sheep.

39% of the UAA was irrigated in 2007. The area of irrigated land has increased by 14% from 2005 to 2007. This increase is mainly related to the large number of horticultural holdings (39% more than in 2005).

Agronomy

for Sustainable Development

Formerly Agronomie

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Editorial

Evidentemente, estamos viviendo momentos políticos, confusos y difíciles.

En ASAPROVE, como entidad profundamente ligada a la actividad agropecuaria, vemos todo esto, con enorme preocupación. La producción agropecuaria ha sido históricamente la columna vertebral de nuestro país y hoy su malestar nos perjudica a todos por igual.

Nuestros productores han demostrado, a través de los años, su profunda vocación de servicio y su amor a la tierra. Es bien sabido, que siempre que han tenido buenos dividendos los han invertido en incrementar sus conocimientos y en tecnología, teniendo como objetivo aumentar su eficiencia.

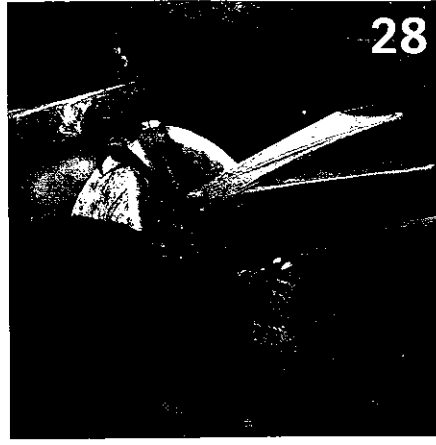
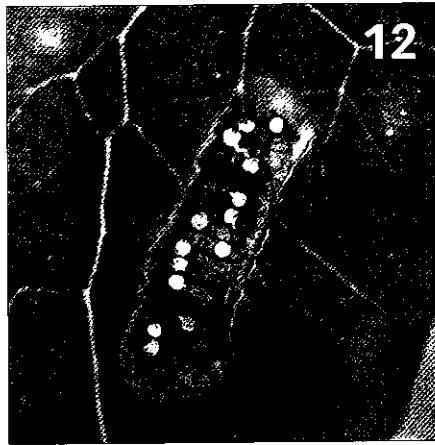
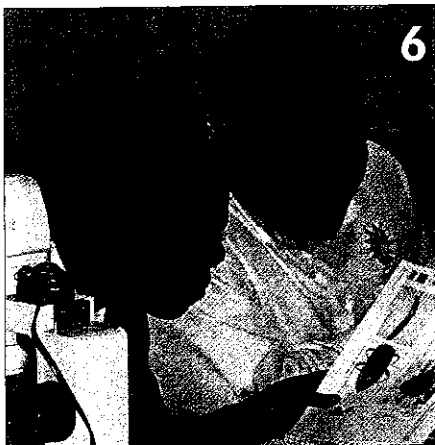
Esto ha quedado indudablemente demostrado en los últimos años, en los que gracias a la gran inversión realizada, prácticamente se triplicó la producción argentina, con un mínimo incremento en las áreas de siembra, hecho que fue destacado por FAO.

Hoy Argentina es el país mejor colocado en el concierto mundial para producir alimentos baratos y de alta calidad.

Nosotros, los técnicos dedicados a esta noble tarea de producir alimentos, es poco lo que en general podemos hacer desde el punto de vista político, y los que si están en condiciones de aportar algo desde esta perspectiva, ya lo están haciendo.

Deseando una pronta solución al conflicto, los demás debemos seguir en el rumbo en que estamos, apoyando a nuestros productores con nuestros conocimientos, para que puedan lograr objetivos aún mayores, en beneficio de nuestra sociedad y del mundo.

La Comisión Directiva



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Cover: Dr Lia Liefting, Scientist, Investigation and Diagnostic Centre, Plant Health and Environment Laboratory, analyses PCR products during a survey to assess the distribution of the new liberibacter species in solanaceous crops in New Zealand (see page 21).

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INDICADORES: se actualiza el cuadro de "Indicadores estadísticos del Sector Agroalimentarios".

Avances de cultivos a 31 de enero de 2008: **Cereales:** aumentan las siembras entre un 2 y 5% según cultivos. En trigo duro sube el 25%. - **Vino:** Producción de 40.426.200 Hl de vino más mosto. Inferior en un 7.4% sobre 2006. - **Aceite:** Se espera una producción de 1.224.787 Tm (16% superior a 2006). La Web contiene el informe completo (<http://www.mapa.es/es/estadistica/pags/superficie/superficie.htm>)

Sacrificio de ganado en mataderos: En 2007 se ha producido 5.833.697 tm de carne. Un 4% superior a 2006.

Inscripciones de Maquinaria Agrícola: aumentan un 3,8% los tractores. (<http://www.mapa.es/es/estadistica/pags/medios/maquinaria/maquinaria.htm>)

Consumo de Fertilizantes Inorgánicos: Aumenta un 10,5 % respecto al año 2006.. (<http://www.mapa.es/es/estadistica/pags/medios/fertilizantes/fertilizantes.htm>)

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MARZO 2008

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INDICADORES: se actualiza el cuadro de "Indicadores estadísticos del Sector Agroalimentarios".

Avances de cultivos a 29 de febrero de 2008: **Cereales**: aumentan las siembras entre un 2 y 5% según cultivos. En trigo duro sube el 25%. - **Vino**: Producción de 40.426.200 Hl de vino más mosto. Inferior en un 7.4% sobre 2006. - **Aceite**: Se espera una producción de 1.224.787 Tm (16% superior a 2006). La Web contiene el informe completo (<http://www.mapa.es/es/estadistica/pags/superficie/superficie.htm>)

Sacrificio de ganado en mataderos: En 2007 se ha producido 5.833.697 tm de carne. Un 4% superior a 2006.

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Estadística mensual de industrias lácteas

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WTO talks 'collapse'

By IAN ELLIOTT

WORLD Trade Organization Director-General Pascal Lamy told countries bluntly last Tuesday evening that efforts to reach an agreement in the long-running Doha Round collapsed over agriculture.

"It is no use beating around the bush. This meeting has collapsed. Members have not been able to bridge their differences," Lamy told reporters in Geneva, Switzerland, after seven trade ministers failed to find a compromise.

While there were other issues to settle, controversial U.S. cotton subsidies for one, Lamy said the main cause for the collapse after nine days of ministerial talks was market access for agricultural products into developing countries. In particular, he said the disagreement was over a Special Safeguard Mechanism (SSM).

Lamy explained July 30, "We were not able to find convergence in the area of the (SSM), and we did not even get around to discussing cotton. As a result, we have not been able to establish the agriculture and NAMA (industrial products) modalities this week."

The SSM would allow developing countries like China, Indonesia and India to temporarily apply new tariffs to imports when their industries face either a surge in import volumes or a collapse in domestic prices. The discord was over what would trigger the SSM and how high the tariffs could go.

■ Continued page 4

CRP release rejected

By JACQUI FATKA

FOR weeks, people have been anticipating a U.S. Department of Agriculture decision on whether or not it should allow penalty-free early outs from the Conservation Reserve Program (CRP).

For now, at least, the answer is "no," according to an announcement last week by Agriculture Secretary Ed Schafer.

"After carefully considering the recent crop reports, weather conditions, the price trends we're seeing in the grain markets and the likelihood of increasing land for crop production, we have decided not to allow

Key Points

- USDA denies penalty-free early out from contracts.
- Better weather, lower prices and future expirations support decision.
- Livestock groups concerned about tight supplies.

the penalty-free release of CRP land at this time," Schafer said.

He explained that despite the damage and disruption caused by severe floods earlier this summer, "the indications so far are that the impact on this year's corn and soybean crops will be less than what was originally

feared."

Crop progress continues to improve as USDA reported that conditions were above the five-year average last week. Schafer also said record-high prices in June have retreated 25% for corn and 14% for soybeans.

Without taking any action, land is and will be brought back into production, Schafer said. The 2008 farm bill lowers the cap on CRP acres from the current 39.2 million to 32 million acres, he explained.

The 34.7 million acres currently enrolled will have to shrink, he said.

■ Continued page 3

Salmonella blame game kicks off

By SALLY SCHUFF

THE federal government's handling of this summer's salmonella outbreak may be what finally signals that Congress has no more patience with what many lawmakers call the "broken" U.S. food safety system.

During a day-long hearing on the salmonella outbreak last week, House oversight and investigations subcommittee chairman Rep. Bart Stupak (D., Mich.) predicted that comprehensive legislation introduced by Rep. John Dingell (D., Mich.) will see action soon after Congress returns in September.

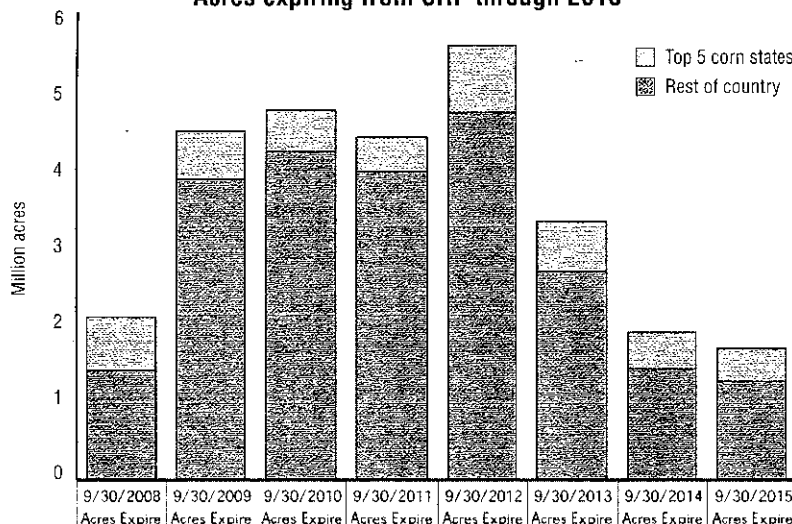
Meanwhile, in the second breakthrough in tracing the outbreak strain of salmonella, Dr. David Acheson, assistant commissioner for food protection at the Food & Drug Administration, announced that his agency had confirmed finding the strain in irrigation water and on a Serrano pepper from a farm in Nuevo Leon, Mexico.

That announcement came July 30.

Earlier in July, Minnesota public health and agriculture department officials — in collaboration with University of Minnesota graduate students who assist in public health emergencies — had traced the source of a Minnesota disease cluster to a jalapeno pepper from the same growing region in Mexico.

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Acres expiring from CRP through 2015



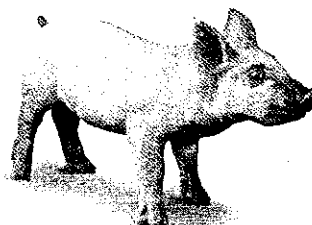
Note: Top 5 corn states are Iowa, Illinois, Minnesota, Indiana and Nebraska.
Source: USDA/Farm Service Agency CRP monthly report.

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Cover: Sucrose-treated *Arabidopsis* seedlings
showing anthocyanin accumulation.
Courtesy of Giovanni Povero.

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Lead Article

- 429 **Dietary management of the metabolic syndrome beyond macronutrients**
Deanna M Minich and Jeffrey S Bland

Due to the complexity of chronic conditions like the metabolic syndrome (MetS), tailored dietary approaches beyond macronutrient ratio modification may be necessary to effectively address metabolic measures. Mounting data on whole foods-based, phytochemical-abundant dietary patterns, such as the Mediterranean diet, reveal that they contain constituents, such as phytochemicals, that may be beneficial for treating MetS. The role of food-based phytochemicals on underlying mechanisms of MetS, specifically as they impact insulin signaling, has yet to be investigated thoroughly. This review discusses various dietary approaches for MetS, with a focus on certain foods and dietary phytochemicals known to impact insulin signaling.

Special Article

- 445 **Potential of resveratrol in anticancer and anti-inflammatory therapy**
Chibuikwe C Udenigwe, Vanu R Ramprasath, Rotimi E Aluko, and Peter JH Jones

Phytochemicals present in food have shown significant prospects in the treatment and management of a vast array of human diseases. Resveratrol is a stilbene-type aromatic phytoalexin predominantly found in grapes, peanuts, berries, turmeric, and other food products. Resveratrol has been reported to exhibit several physiological activities including anticancer and anti-inflammatory activities in vitro and in experimental animal models, as well as in humans. Anticancer activity of this compound is mainly due to induction of apoptosis via several pathways, as well as alteration of gene expressions, all leading to a decrease in tumor initiation, promotion, and progression. Resveratrol exhibits anti-inflammatory activity through modulation of enzymes and pathways that produce mediators of inflammation and also induction of programmed cell death in activated immune cells. Resveratrol has been shown to produce no adverse effects, even when consumed at high concentrations. Hence, resveratrol possesses good potential to be used as an adjunctive or alternative therapy for cancer and inflammatory diseases.

Nutrition Science↔Policy

- 455 **Current framework for DRI development: what are the pros and cons?**
Robert M Russell

- 459 **Challenges with using chronic disease endpoints in setting dietary reference intakes**
Paula R Trumbo

Since 1941, the recommended dietary allowances (RDAs) in the United States have been based on the goal of maintaining health in the country's population. There has been a growing body of evidence to support the role of diet in reducing the risk of chronic diseases. For this reason, there has been recent emphasis on considering data on chronic disease endpoints for setting dietary reference intakes (DRIs). Despite this emphasis, none of the RDAs set during the DRI review were based on chronic disease risk. However, chronic disease risk was considered for determining adequate intakes and even some acceptable macronutrient distribution ranges. This article discusses the application of and challenges associated with using chronic disease endpoints in setting DRIs.

Emerging Science

- 465 **Phytochemicals and age-related eye diseases**
Michael Rhone and Arpita Basu

Cataracts, glaucoma, and age-related macular degeneration (AMD) are common causes of blindness in the elderly population of the United States. Additional risk factors include obesity, smoking, and inadequate antioxidant status. Phytochemicals, as antioxidants and anti-inflammatory agents, may help prevent or delay the progression of these eye diseases. Observational and clinical trials support the safety of higher intakes of the phytochemicals lutein and zeaxanthin and their association with reducing risks of cataracts in healthy postmenopausal women and improving clinical features of AMD in patients. Additional phytochemicals of emerging interest, like green tea catechins, anthocyanins, resveratrol, and Ginkgo biloba, shown to ameliorate ocular oxidative stress, deserve more attention in future clinical trials.

- 473 **Impact of nutrient intake timing on the metabolic response to exercise**
Brooke R Stephens and Barry Braun

Effects of nutrient intake timing and exercise on carbohydrate (e.g. insulin sensitivity), protein (muscle protein synthesis), and fat (circulating triacylglycerols) metabolism are reviewed in this paper. Altered nutrient intake timing relative to exercise can modulate the metabolic response, which is relevant for individuals seeking to use exercise to enhance health.

- 477 **Evidence for dietary regulation of microRNA expression in cancer cells**
Cindy D Davis and Sharon A Ross

MicroRNAs (miRNAs) are an abundant class of short noncoding RNAs that are widely expressed in mammalian cells and are important in post-translational gene regulation, including regulation of cell proliferation, apoptosis, and differentiation processes. miRNAs are involved in cancer initiation and progression and their expression patterns serve as phenotypic signatures of different cancers. Recent evidence suggests that dietary components as diverse as folate, retinoids, and curcumin exert cancer-protective effects through modulation of miRNA expression. miRNAs may be useful as biomarkers of cancer prevention or nutritional status, as well as serve as potential molecular targets that are influenced by dietary interventions.

- 483 **Nutrition Updates**

On the cover: Metabolic syndrome is a complex condition that may be best treated by an array of dietary interventions. Mounting evidence suggests that a whole foods-based diet rich in phytochemicals, such as those found in green tea, may be beneficial for treating this disorder. Image is "Tending the tea fields." From a series of paintings depicting tea curing, Qing dynasty, 19th century. Photo courtesy of Art Resource, New York.

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- S65 The *Bmi-1* polycomb group gene in skin cancer: regulation of function by (–)-epigallocatechin-3-gallate**
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- S69 Influence of genetic inheritance on global epigenetic states and cancer risk prediction with DNA methylation signature: challenges in technology and data analysis**
Maxwell P Lee and Barbara K Dunn

On the cover: Evidence continues to surface for constituents in food and dietary supplements to influence gene expression, as well as an individual's risk of developing some cancers. Since epigenetic regulatory processes may be susceptible to changes by environmental factors, they offer potential mechanistic explanations for how diet may modify cancer risk and tumor behavior. Image is "An outdoor feast", c1605–1615. From the "Album Amicorum" of Moyses Walens, of Cologne. © British Library. Photo courtesy of HIP/Art Resource, New York.

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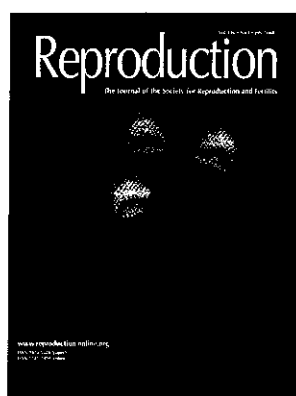
The Journal of the Society for Reproduction and Fertility

August 2008

Volume 136

Part 2

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Ram spermatozoa stained with FITC-labelled peanut agglutinin, after cell permeabilization, to show the acrosome and counter-stained with propidium iodide to show nuclei. Courtesy Ana del Olmo and Eduardo Roldan.

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COVER

A dynamic aurora borealis during a storm over Canada. Energy from the Sun's extended atmosphere is stored at Earth's magnetic field and is released explosively, powering the aurorae. Previously stable aurorae brighten, filament, expand poleward, and cover the sky within 1 to 2 minutes. The energy release starts at an altitude of 130,000 kilometers, at the magnetic equator, near local midnight. See page 931.

Image: Norbert Rosing/National Geographic/Getty Images

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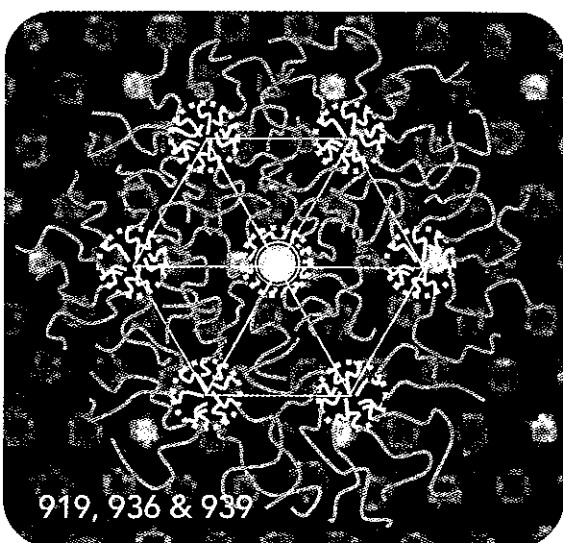
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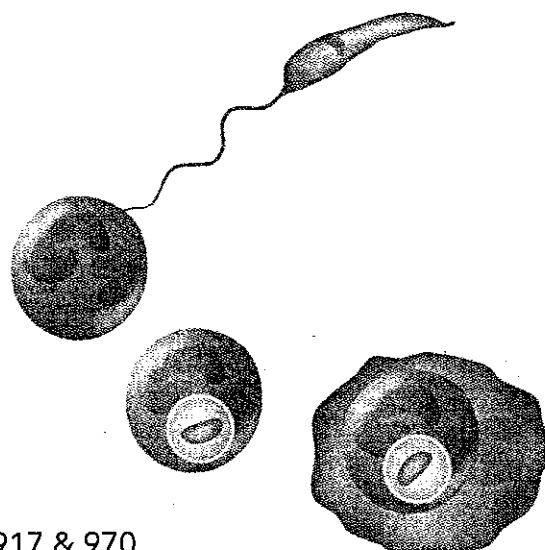
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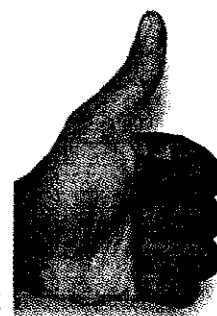
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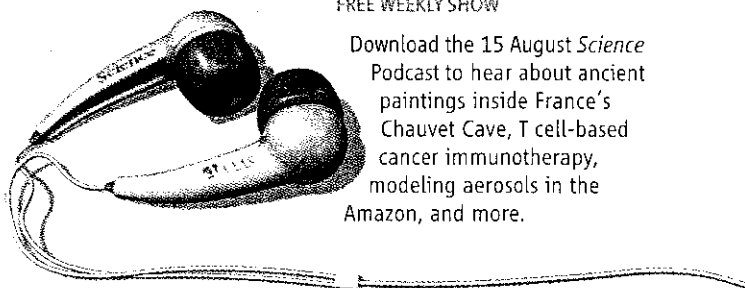


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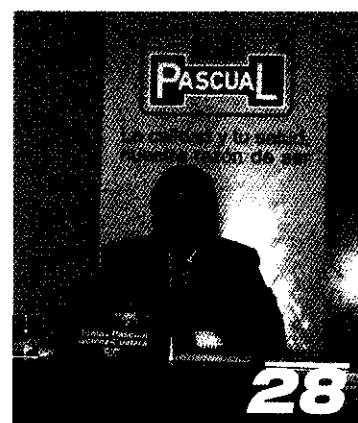


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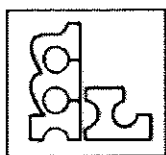
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mercolleida

Mercado en origen



BOLETÍN INFORMATIVO AGROPECUARIO DE LA LONJA DE MERCOLLEIDA

NÚMERO 2.090 — AÑO XXXV

SESIONES DE LONJA DEL 11 AL 29 DE AGOSTO DE 2008

SEMANAS 33-36/2008

HECHOS

TITULAR.

Esta semana ha saltado la chispa al mercado americano. Según declaraciones realizadas por el ministro de Agricultura de Rusia, este país está preparando una reducción importante de las cuotas de importación de carne de cerdo y de productos avícolas procedentes de Estados Unidos.

Si hasta la fecha los contactos entre representantes de ambos países estaban encaminados a examinar posibles recortes rusos a las importaciones de Estados Unidos, las conversaciones parecen haber entrado ahora en vía rápida, a causa del aumento de las tensiones en la guerra de Georgia y el reconocimiento ruso de independencia a dos provincias de este país.

Un posible recorte de las cuotas de importación de aves de corral y de porcino, ha cogido por sorpresa al mercado americano. La mayoría de mercados de futuros del cerdo han cedido el máximo permitido en un día, mientras que los futuros de vacuno han acusado una brusca reducción, con la consiguiente presión sobre los precios de la carne.

Es muy pronto para sacar consecuencias del impacto que puede suponer una reducción de las compras de porcino y de aves de Rusia a Estados Unidos.

Se desconoce cómo de importante puede ser la reducción, y cuando se haría efectiva. Pero una cuestión sí está clara: y es que Rusia se ha convertido en un mercado clave para Estados Unidos.

En los últimos años, las exportaciones americanas de carne de porcino a Rusia han pasado de unos 5 millones de libras al mes en 2005, a alrededor de 40 millones en el primer semestre de 2008. El hecho es que Rusia es un gran cliente de *trimmings* (recortes de cerdo) así como de otras variedades de carne, lo que ha supuesto un golpe de efecto a los envasadores de cerdo, después de que en los últimos meses el precio de los *trimmings* haya alcanzado niveles récord.

Ver página 10

PRECIOS

CERDO CEBADO: 1,310 (=).- Nueva repetición de la cotización del cerdo cebado, estacionada en 1,31 euros/kilo desde el último día de julio en la semana 32. Los parámetros del sector informan sobre un volumen de ventas de los colaboradores productores de la Mesa cifrado en 201.678 cabezas vendidas, a un peso medio de 103,837 kilos en vivo, 291 gramos más alto que la semana pasada. /página 3

GANADO FRISÓN <300 KG: 3,30 (+0,09).- Definitivamente, en el mercado del vacuno, se ha experimentado un cambio de sentido rotundo en la trayectoria de precios. Se han consolidado los avances iniciados a mitad de agosto, y esta misma línea de firmeza es la que ha imperado en el cierre del mes, ante una demanda que ha de prepararse para una actividad totalmente completa a la entrada de septiembre. /página 12

TERNERO CRUZADO 65-70 KG: 335,00 (+12).- La reciente recuperación de los precios de la carne da aliento a la demanda de ganado para cebo, que se muestra nuevamente interesada por la cría. En el norte (Torrelavega), las transacciones han sido ágiles, sobre todo en pasteros de buenas formas, inclinando las cotizaciones al alza. La presencia de la demanda francesa también ha animado los tratos, al mostrarse interesada por los frisonos y azul-belga. /página 14

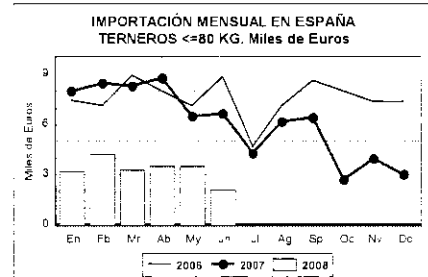
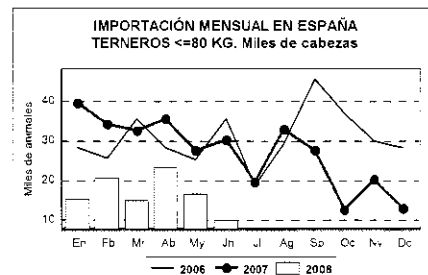
MELOCOTÓN ROJO 67+: 0,45-0,50 (-0,05).- La pérdida de firmeza y posterior inclinación de los precios a la baja señalada la semana pasada en el melocotón amarillo, ha acabado por transmitirse al resto de las variedades de fruta de hueso. La salida al mercado de un volumen más importante de oferta desde campo, ha coincidido con una pérdida de fluidez en las operaciones de exportación, comportando una inflexión a la baja en las referencias de precios. /página 18

DATOS

TITULAR.

La importación española de mamones y de pasteros, en caída libre desde el último trimestre de 2007, se ha situado en mínimos en junio, último mes del que se dispone la estadística que elabora mensualmente el ministerio de Industria, Turismo y Comercio.

Las 10.000 cabezas de terneros de menos de 80 kg, suponen un retroceso del 67% en relación al mismo mes del año anterior, a la vez que su nivel de sitúa en el más bajo de los últimos años. Al tiempo que ha cedido el interés por el cebo, también sus precios han experimentado una caída sustancial. Pero las perspectivas de flojedad que ha presentado el mercado de la carne, junto con unos costes de producción demasiado elevados, han desincentivado la demanda, con la consiguiente depresión de oferta en el mercado.



Ver estadística en página 14

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Bernard ROUX

Les institutions**du développement agricole durable des pays du Sud**

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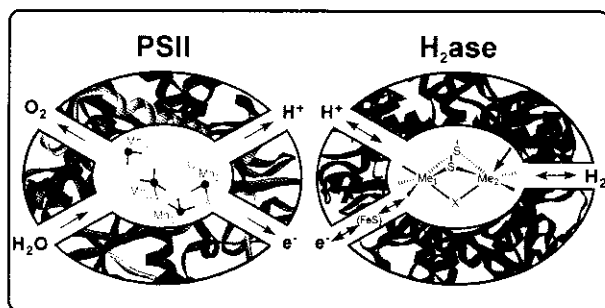
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Solar water-splitting into H_2 and O_2 : design principles of photosystem II and hydrogenasesWolfgang Lubitz,* Edward J. Reijerse
and Johannes Messinger*

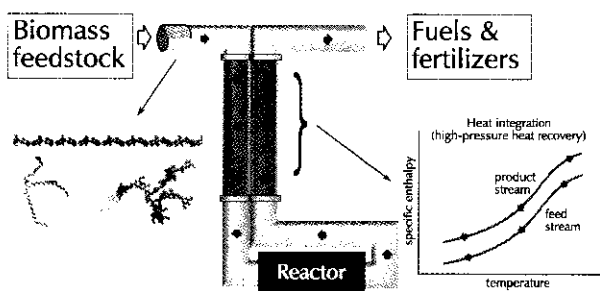
Schematic representation of light-induced water-splitting in photosystem II of oxygenic photosynthesis on a Mn_4O_xCa cluster and hydrogen production in hydrogenase (NiFe or FeFe cluster).



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Thermochemical biofuel production in hydrothermal media: A review of sub- and supercritical water technologiesAndrew A. Peterson, Frédéric Vogel, Russell P. Lachance,
Morgan Fröling, Michael J. Antal, Jr. and
Jefferson W. Tester*

Hydrothermal technologies offer unique possibilities in high-efficiency reforming of biomass into fuels.

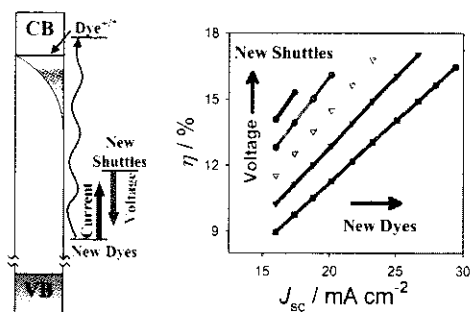


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Advancing beyond current generation dye-sensitized solar cellsThomas W. Hamann, Rebecca A. Jensen,
Alex B. F. Martinson, Hal Van Ryswyk and
Joseph T. Hupp*

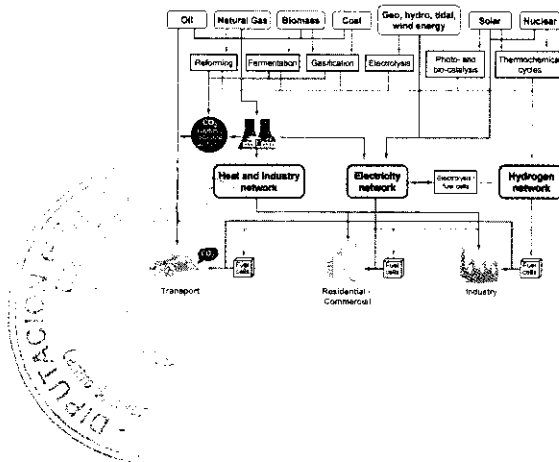
Strategies for improving each of the three major photo-related components of dye-sensitized solar cells (dye, redox shuttle, photoanode), combined with a critical literature review, are presented in order to explore the potential of future generation cells.



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Hydrogen nexus in a sustainable energy futureA. Sartbaeva, V. L. Kuznetsov, S. A. Wells
and P. P. Edwards*

This article aims to illustrate the "hydrogen nexus" as a possible link from today's carbon economy to a sustainable energy future centred on hydrogen.



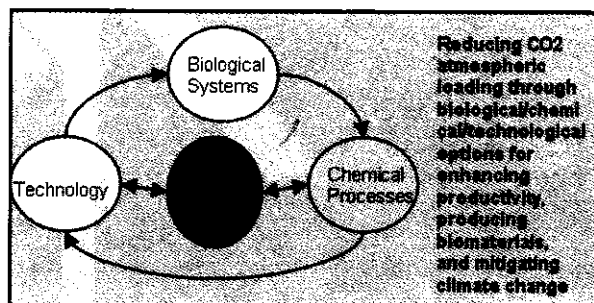
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Sequestration of atmospheric CO₂ in global carbon pools

R. Lal

This article describes technological options of sequestering atmospheric carbon dioxide. Soil carbon sequestration is related to food security and ecosystem services.

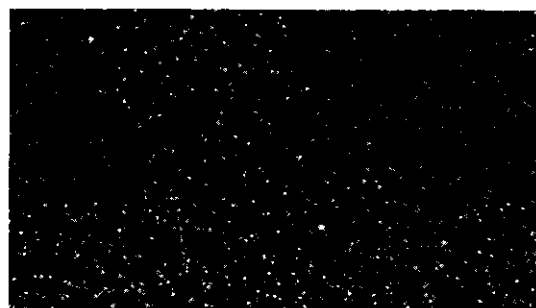


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Recent developments in proton exchange membranes for fuel cells

Ram Devanathan

Molecular dynamics simulation of Nafion has provided insights into the nanostructure of the hydrated membrane.

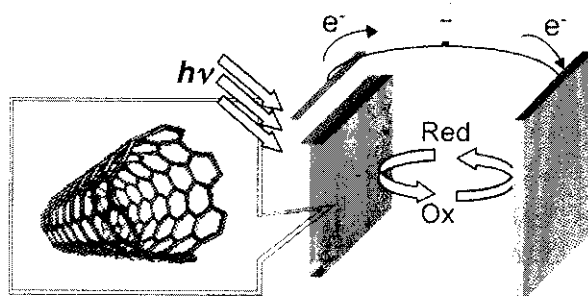


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Carbon nanotube-modified electrodes for solar energy conversion

Tomokazu Umeyama and Hiroshi Imahori*

Recent advancements on the application of carbon nanotubes to photoelectrochemical devices and cells are reviewed.



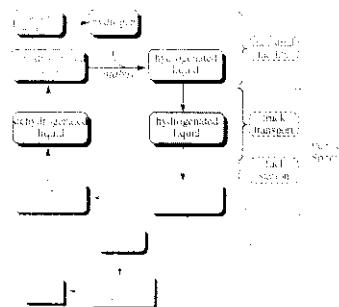
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Hydrogen storage in liquid organic heterocycles

Robert H. Crabtree

Hydrogen storage in liquid organic heterocycles is feasible thermodynamically and is attractive in terms of simplicity, safety, scalability, heat management and economy.

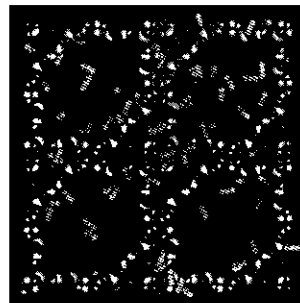


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Exceptionally high CO₂ storage in covalent-organic frameworks: Atomistic simulation study

Ravichandar Babarao and Jianwen Jiang*

An atomistic simulation study reveals the exceptionally high CO₂ storage in covalent-organic frameworks, even surpassing the experimentally reported highest capacity.

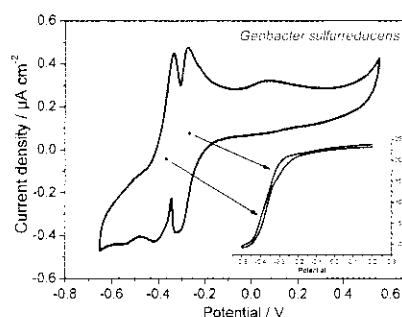


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On the use of cyclic voltammetry for the study of anodic electron transfer in microbial fuel cells

Katja Fricke, Falk Harnisch and Uwe Schröder*

In this communication we discuss, by means of the metal reducing bacterium *Geobacter sulfurreducens*, a strategy to use cyclic voltammetry for the study of anodic bioelectrocatalytic electron transfer in microbial fuel cells.



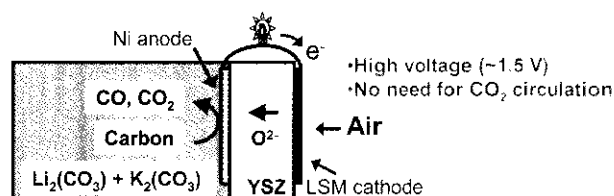
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Electrochemical oxidation of solid carbon in hybrid DCFC with solid oxide and molten carbonate binary electrolyte

Yuta Nabae, Kevin D. Pointon and John T. S. Irvine*

This article investigates in detail the electrochemistry of the oxidation of solid carbon in the carbon/carbonate slurry in the hybrid direct carbon fuel cell (HDCFC).

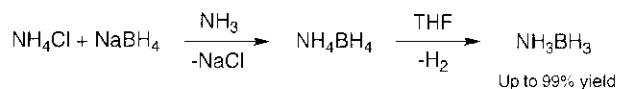


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Synthesis of ammonia borane for hydrogen storage applications

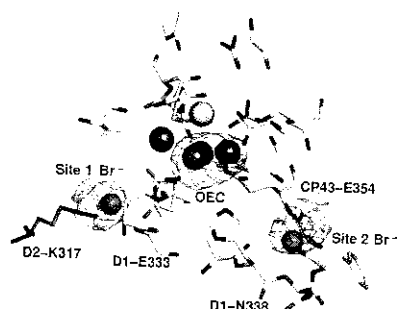
David J. Heldebrant, Abhi Karkamkar, John C. Linehan and Tom Autrey*

An easy one-pot synthesis of ammonia borane in high yield and purity is described.



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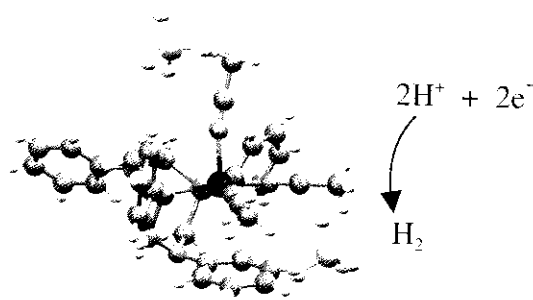


X-ray crystallography identifies two chloride binding sites in the oxygen evolving centre of Photosystem II

James W. Murray, Karim Maghlaoui, Joanna Kargul, Naoko Ishida, Thanh-Lan Lai, A. William Rutherford, Miwa Sugiura, Alain Boussac and James Barber*

Two halide binding sites in the oxygen evolving center (OEC) Photosystem II located by X-ray crystallography.

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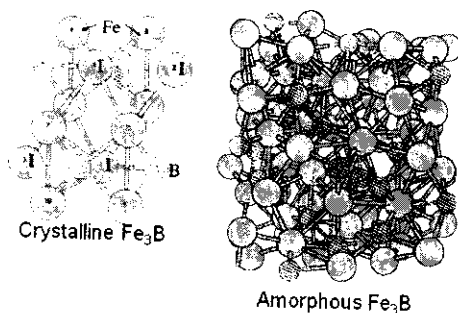


Hydrogen production using cobalt-based molecular catalysts containing a proton relay in the second coordination sphere

George M. Jacobsen, Jenny Y. Yang, Brendan Twamley, Aaron D. Wilson, R. Morris Bullock, M. Rakowski DuBois and Daniel L. DuBois*

The cobalt complex $[\text{Co}(\text{P}^{\text{Ph}}_2\text{N}^{\text{Ph}}_2)(\text{CH}_3\text{CN})_3](\text{BF}_4)_2$ is an active electrocatalyst for hydrogen production with a turnover frequency of 90 s^{-1} and an overpotential of 285 mV.

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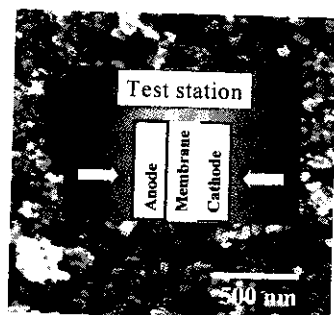


Using first-principles calculations to accelerate materials discovery for hydrogen purification membranes by modeling amorphous metals

Shiqiang Hao and David S. Sholl*

Methods are introduced to accurately predict hydrogen permeation through amorphous alloys, opening new possibilities for discovering high flux hydrogen membranes.

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Fuel cell cathode catalyst layers from "green" catalyst inks

Zhong Xie, Xincheng Zhao, Makoto Adachi, Zhiqing Shi, Tetsuya Mashio, Atsushi Ohma, Kazuhiko Shinohara, Steven Holderoft* and Titichai Navessin*

Fuel cell cathodes prepared from a water-based ink exhibit limited performance due to poor proton conduction.

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GANADERÍA, nº 55, junio-julio 2008

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La prevención de incendios forestales mediante pastoreo controlado en Andalucía

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La prevención de incendios forestales mediante pastoreo controlado en Andalucía

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Desmantelamiento de granjas y abastecimiento de los mercados

Decíamos ayer

El semen congelado, en la práctica
D. Bayón Sánchez, Revista Agricultura febrero 1955

En la palestra

Los ganaderos ya disponen de una vacuna contra el serotipo 8 de la Lengua Azul. El Gobierno pone en marcha el registro de establecimientos de alimentación animal. El FEGA establece la cuantía definitiva de las primas al vacuno correspondientes a 2007. Echa a andar el contrato tipo homologado sin el apoyo de COAG. La Asociación de Productores de Cerdo Ibérico de Extremadura propone una marca de calidad. El ovino contará con un contrato tipo homologado.

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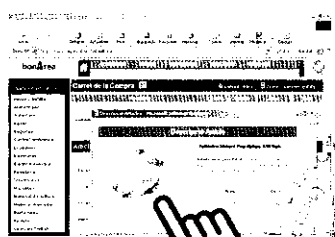
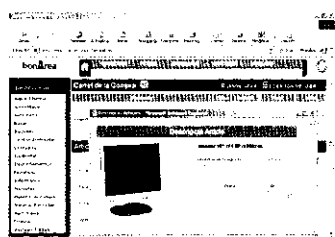
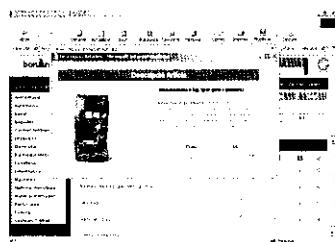
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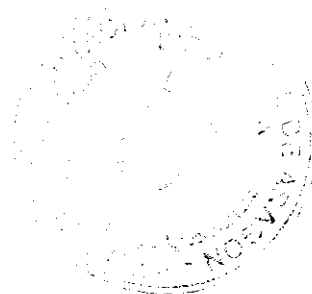
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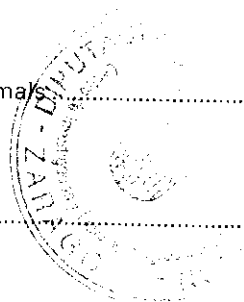


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JAVMA News

Small animal practitioners worry about weathering the current economic climate, as some pet owners may have less discretionary income or may be less willing to spend on veterinary care. *See PAGE 536*

Letters to the Editor

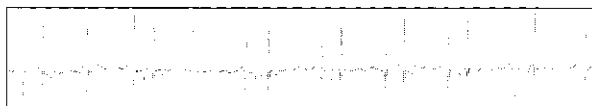
See PAGE 550

What Is Your Diagnosis?



See PAGE 555

ECG of the Month



See PAGE 561

TOPICS IN DRUG THERAPY

Issues regarding the use of vancomycin in companion animals

The emergence and dissemination of multidrug-resistant bacterial pathogens is an increasing problem in veterinary medicine, which may increase the pressure to use newer antimicrobials, such as vancomycin. If veterinarians decide to use drugs such as vancomycin, it is imperative that they take the time to adequately understand the properties of those drugs. *See PAGE 565*

ZOOONOSIS UPDATE

Glanders

Glanders is a highly contagious bacterial disease of horses, mules, and donkeys that is characterized by respiratory, cutaneous, and lymphatic nodular lesions. The disease is zoonotic, affecting persons in close contact with infected animals and those working with the organism in laboratory settings. Although eradicated from most countries, focal outbreaks of glanders still occur. *See PAGE 570*

Effects of ventral bulla osteotomy for removal of inflammatory polyps or nasopharyngeal masses in cats

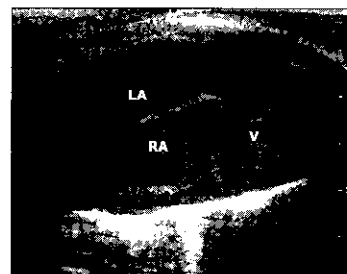
Presently, ventral bulla osteotomy is considered the preferred technique for managing inflammatory nasopharyngeal polyps in cats. However, little information is available on whether VBO can affect hearing. In a series of 17 cats with nasopharyngeal polyps or masses, air-conducted BAER testing was performed before and after VBO and mass removal. Six of the 17 cats were deaf prior to surgery, and auditory ability did not change from presurgical status in any of the cats. Findings suggested that VBO for removal of nasopharyngeal polyps or masses was unlikely to affect hearing, as determined by air-conducted BAER testing, and that cats that were deaf prior to surgery did not regain hearing. *See PAGE 580*

Inciting causes, targets, and risk factors associated with redirected aggression in cats

Redirected aggression is suspected when a cat behaves aggressively toward an irrelevant but accessible target at least once and the primary inciting stimulus is inaccessible or no longer available. It is reportedly one of the most common forms of feline aggression toward people. In a case-control study of 19 cats with a history of redirected aggression and 64 cats with no such problems, loud noises or interactions with other cats were identified as the inciting cause for 21 of 22 (95%) incidents of redirected aggression. Case cats were more likely to have a sound phobia and less likely to live outdoors than were control cats. *See PAGE 586*

Ultrasonographic appearance of the coelomic cavity in healthy green iguanas

Thorough descriptions of normal ultrasonographic anatomy are lacking for many reptile species, including the green iguana. In a cross-sectional study involving 26 healthy green iguanas, structures that could be visualized in all animals during coelomic



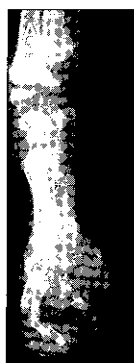
ultrasonography included the heart and cardiac chambers, liver, caudal vena cava, hepatic veins, portal vein, gall bladder, pyloric portion of the stomach, and, when distended, urinary bladder. Visualization of the kidneys was poor. The spleen could be identified in 17 animals, and the gonads could be identified in 22, but were most easily identified in males evaluated during November (ie, during the breeding season). Anechoic, free coelomic fluid was identified in 3 animals. *See PAGE 590*

Failure to identify an association between *Bartonella* infection and idiopathic rhinitis in dogs

Investigators have suggested that *Bartonella* infection may play a role in dogs with chronic rhinitis. In a study of 44 dogs with idiopathic nasal discharge and 63 control dogs, however, none of the dogs with rhinitis were found to have serum antibodies against *Bartonella henselae* or *Bartonella vinsonii* subsp. *berkhofii*, and results of a PCR assay for *Bartonella* DNA in blood were negative. One control dog had antibodies against *B. henselae*; a second control dog had positive PCR assay results. The failure to find any evidence of infection with *Bartonella* spp in dogs with idiopathic nasal discharge suggested that *Bartonella* infection was not a common cause of this condition.

See PAGE 597

Clinical, radiographic, and pathologic abnormalities in dogs with multiple epiphyseal dysplasia



Multiple epiphyseal dysplasia is a rare condition of dogs that has been reported infrequently. A review of medical records of 19 dogs with MED from 10 litters revealed that most dogs were examined because of lameness at 5 to 8 months of age. The most common radiographic abnormality was a deficiency in ossification of the epiphyses, apophyses, and cuboidal bones of the appendicular skeleton and the epiphyses of the vertebrae; ossification of the metaphyses and the diaphyses typically was normal. Disease severity was consistent among littermates, but varied among dogs

from different litters. The condition most likely had an autosomal recessive mode of inheritance.

See PAGE 600

Evaluation of the use of human albumin in critically ill dogs

Hypoalbuminemia and decreased colloid osmotic pressure are common in critically ill dogs, and human albumin has been used to increase plasma oncotic pressure in dogs. However, the safety and efficacy of this treatment is not known. In a review of medical records of 73 critically ill dogs, treatment with hu-

man albumin was associated with significant changes in serum albumin and total protein concentrations and colloid osmotic pressure. Serum albumin and total protein concentrations, colloid osmotic pressure, and change in serum albumin concentration were higher in survivors than in nonsurvivors. Seventeen (23%) dogs had at least 1 complication potentially associated with human albumin administration, and 3 (4%) dogs had severe delayed complications.

See PAGE 607

Temperature readings from a percutaneous microchip and a digital rectal thermometer in equids

Quick, accurate, and easily obtained measurements of body temperature can assist in the early detection of contagious diseases and are an important part of equine biosecurity programs. In a study involving 52 Welsh pony foals that were 6 to 10 months old and 30 Quarter Horses that were 2 years old, temperature readings obtained with an implanted, percutaneous, thermal-sensing microchip were compared with readings obtained with a digital rectal thermometer. Microchip readings varied with ambient temperature and rectal temperature. However, the microchip appeared to have potential use for initial screening of body temperature in equids at ambient temperatures $>15.6^{\circ}\text{C}$ (60°F).

See PAGE 613

Outbreak of *Salmonella enterica* serotype Newport in a beef cow-calf herd exposed to BVDV

A commercial cow-calf operation was evaluated because of severe disease and death among cows and calves in 1 of 3 separate groups at the facility. Clinical signs included severe watery and bloody diarrhea, dehydration, weakness, and death, and *Salmonella* Newport was recovered from tissues of affected cows and calves. Ear notch specimens from cattle in all 3 groups were tested for bovine viral diarrhea virus. The proportion of calves persistently infected with BVDV was significantly higher among the affected group of cattle than among cattle in the unaffected groups. It is possible that immunosuppression associated with persistent BVDV infection was associated with the *Salmonella* outbreak.

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Cover illustration: Secondary growth induces stresses and strains in the tissues of the liana *Aristolochia macrophylla* (background). In the axes of *A. macrophylla*, following an increase in the volume of the secondary tissues, the outer sclerenchymatous cylinder ruptures. Two different mechanical tests were undertaken to test the point of failure of the outer cortical cylinders, comprising the outer sclerenchymatous cylinder. In a first experiment, transverse compression loads were applied to the outside of the cortical cylinders (lower left) causing ovalization of the cylinder until failure. In a second set of experiments, radial hydraulic pressure was applied to the inside of the cortical cylinders (lower right), mimicking the mechanical effects of internal growth processes due to secondary vascular growth. The increase in the internal pressure finally led to rupturing of the sclerenchymatous and collenchymatous cortical cylinders. (Images by T. Masselter; see Masselter and Speck, pp. 2955–2967.)

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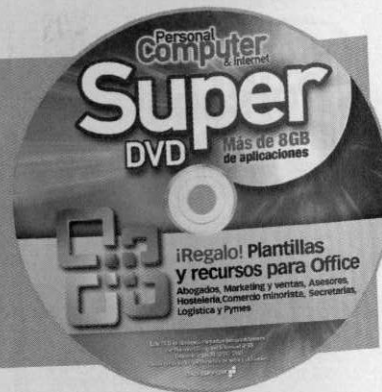
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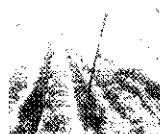
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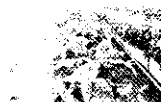
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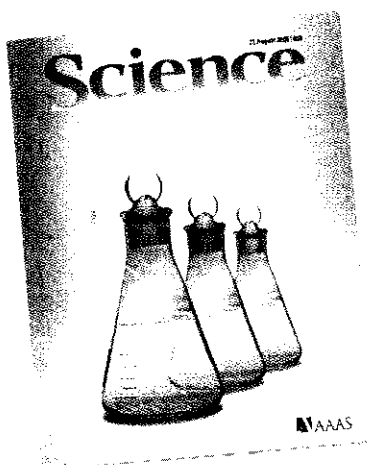
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Photo illustration: Paul Montie
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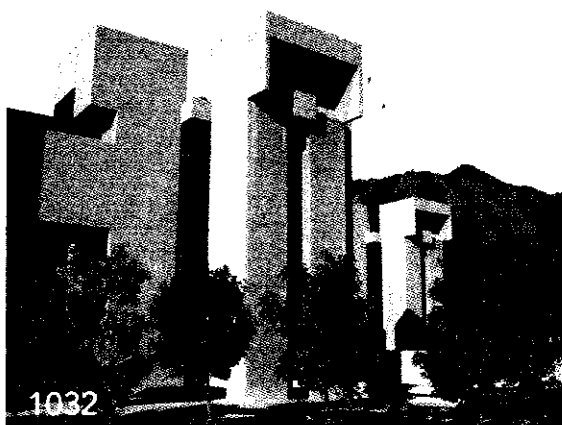
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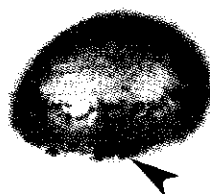
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Two quantum communication channels, each of which is so noisy that it has zero-capacity to independently transmit information, can do so when used together.

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High-Quality Binary Protein Interaction Map of the Yeast Interactome Network

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Comparison of existing methods for mapping protein-protein interactions in yeast cells shows that the high-throughput approaches are complementary to one another.

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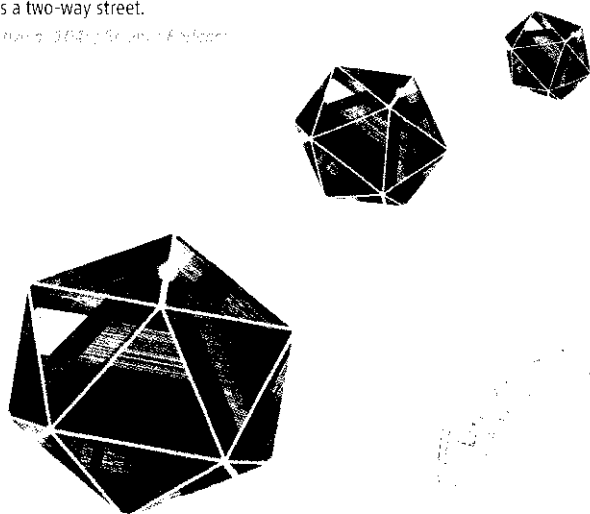
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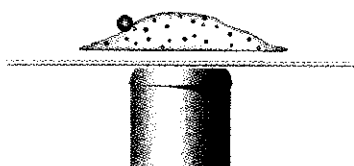
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